

CLAIMS

- 1                   1.       A thermal decomposition apparatus for wastes comprising:  
2       a heating chamber for heating the wastes;  
3                   an inlet port for introducing the wastes into said heating chamber;  
4       at least one pair of electrodes provided within said heating chamber;  
5                   a light emitting heater consisting a plurality of balls which contain  
6       carbon as a main ingredient, said light emitting heater being provided between said at  
7       least one pair of electrodes so as to produce an electric discharge when a voltage is  
8       applied across said at least one pair of electrodes; and  
9                   an outlet port for discharging out of said heating chamber gases into  
10       which the wastes are thermally decomposed.
- 1                   2.       The thermal decomposition apparatus according to claim 1,  
2       further comprising oxygenless state forming means for placing said heating chamber  
3       in an oxygenless state such that said plurality of balls are placed in an oxygenless  
4       state.
- 1                   3.       The thermal decomposition apparatus according to claim 1,  
2       further comprising decompressing means for decompressing said heating chamber  
3       such that said plurality of balls are placed in a vacuum state.
- 1                   4.       The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, wherein said plurality of balls are each made of at least one selected  
3       from the group of charcoal, graphite and a carbon composite material.
- 1                   5.       The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, wherein said plurality of plurality of balls each have impermeability.
- 1                   6.       The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, wherein said plurality of balls each take the form of a perfect sphere.

1                   7.       The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, further comprising pressing means provided within said heating  
3       chamber for pressing the wastes against said plurality of balls.

1                   8.       The thermal decomposition apparatus according to any one of  
2       claims 1 to 7, further comprising a filter made of at least one of activate carbon and  
3       charcoal for allowing the decomposed gases to pass therethrough.

1                   9.       The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, further comprising a vacuum meter for measuring the pressure within  
3       said heating chamber, and pressure adjusting means for adjusting the pressure within  
4       said heating chamber to a predetermined value.

1                   10.      The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, further comprising an intervening spacer which contain carbon as a  
3       main ingredient, the intervening spacer being placed at least between said plurality of  
4       balls and an inner wall of said heating chamber.

1                   11.      The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, wherein at least portions of the inner wall of said heating chamber  
3       which are placed in contact with said plurality of balls is made of a monolithic  
4       refractory which contains at least one selected from the group of boron nitride,  
5       niobium, silicon carbide, boron carbide, magnesium oxide, hafnium oxide, hafnium  
6       dioxide, and beryllium aluminum oxide.

1                   12.      The thermal decomposition apparatus according to any one of  
2       claims 1 to 3, wherein at least a part of the pairs of electrodes may take the form of a  
3       rod or horn surrounded by said plurality of balls.

1                   13.     The thermal decomposition apparatus according to any one of  
2     claims 1 to 3, further comprising a pipe for introducing liquid wastes into said  
3     heating chamber.

1                   14.     The thermal decomposition apparatus according to any one of  
2     claims 1 to 3, further comprising a decomposed gas harm eliminating device for  
3     thermally decomposing harmful materials remaining in the decomposed gases into  
4     harmless gases, the decomposed gas harm eliminating device comprising:  
5                   a decomposed gas heating chamber for heating the decomposed gases;  
6     a decomposed gas inlet port for introducing the decomposed gases into said  
7     decomposed gas heating chamber;  
8                   at least one pair of second electrodes provided within said  
9     decomposed gas heating chamber;  
10                  a second light emitting heater consisting of a plurality of second balls  
11     which contain carbon as a main ingredient, provided between said at least one pair of  
12     second electrodes so as to produce an electric discharge when a voltage is applied  
13     across said at least one pair of second electrodes; and  
14                  a harmless gas outlet port for discharging out of said decomposed gas  
15     heating chamber harmless gases to which the decomposed gases are rendered  
16     harmless; and  
17                  a filter comprising at least one of active carbon and charcoal for  
18     allowing the harmless gases pass therethrough.

1                   15.     The thermal decomposition apparatus according to claim 14,  
2     wherein said decomposed gas harm eliminating device further  
3     comprising at least one of:  
4                   a second vacuum meter for measuring the pressure within said  
5     decomposed gas heating chamber, and second pressure adjusting means for adjusting  
6     the pressure within said decomposed gas heating chamber to a predetermined value;

7                   a second intervening spacer which contain carbon as a main  
8 ingredient, placed at least between said plurality of second balls and the inner wall of  
9 said decomposed gas heating chamber;  
10                  at least portions of the inner wall of said decomposed gas heating  
11 chamber which are placed in contact with said plurality of second balls being made  
12 of a monolithic refractory which contains at least one selected from the group of  
13 boron nitride, niobium, silicon carbide, boron carbide, magnesium oxide, hafnium  
14 oxide, hafnium dioxide, and beryllium aluminum oxide; and  
15                  a second pair of electrodes having at least a part thereof in the form of  
16 a rod or horn surrounded by said plurality of second balls.